

# WaterGreat SR-2 Watering system for Gravity Feed Systems



**Congratulations on your purchase of the WaterGreat LLC SR-2 watering system for Gravity Feed Applications. Your kit includes the following:**

Quant	Description	Quant	Description
1	SR-2 Controller Assembly	6	0.71 inch Elbow fittings
1	Motorized Gate Valve ½ inch	4	0.71 inch Tee fittings
1	Female Garden Hose Adapter to ½ inch	1	Male Garden Hose Adapter
100	0.71 inch Irrigation Tubing, feet	1	Female Garden Hose to 0.71inch Adapt
4	End of Line Plug	25	Adjustable Spray Bubbler 1/4"
1	Water Filter Housing, Hose Thread	1	Stainless Steel Filter, 150 Mesh

# WaterGreat SR-2™ Installation

Thank you for purchasing the WaterGreat LLC SR-2 gravity feed watering controller.

1) Attach stake and stainless steel tube to the control assembly as shown and place in the ground where the sun shines at least 5 hours a day. Turn knob to below “1” for no watering (as shown in picture) until the unit charges in the sun (up to 24 hours).



2) Place the slender sensor rod in an area watered by the system, about 4 inches from a dripper if using drip irrigation. Push the rod into the soil, red dot UP at a slight angle, so that lower tip is about 1 1/2 inches from the surface. Use undisturbed soil. It is best to place the sensor in an area that dries the quickest. GIVE THE AREA A GOOD WATERING AFTER INSERTION.

3) Connect the motorized gate valve to a spigot or hose as shown. Alternately, you may remove the hose fittings and directly plumb to 1/2" NPT (gives maximum flow). Connect the outlet to the drip irrigation system or other watering system. Gravity feed systems need special care to ensure even watering. Use big tubing and low flow dripping if irrigating more than a couple of plants. Use adjustable drippers and make each dripper output the same quantity of water. If only watering one or two plants, direct water so that each is watered equally. See the section on



“Watering considerations for Gravity Feed Systems.” If desired, the valve can be directly installed into PVC pipe or plumbing as well. Note the IN and OUT can be either side. If sand or debris is present in the water, place a filter in-line prior to the valve.

## WaterGreat SR-2 Installation

4) The next day make a note of the number of blinks on the controller. This gives you the current soil moisture reading. Adjust the knob to the same number as the blinks to give good watering. Periodically check and turn up or down if needed, using the knob. Higher numbers on the knob provides higher soil moisture. The system will water if the blinks (moisture reading) goes BELOW the set value, for the time determined by the switches on the underside of the control assembly. (1, 3, 8 or 20 minutes). The system measures the moisture 3 times a day, in the morning, 4 hours later and 8 hours later. The system maintains the last reading even after watering, until the next measurement 4 hour later.

Need a shorter or longer watering time? Need a longer cable from the valve to the controller? **SEE ADVANCED INSTRUCTIONS.**

### **What is the basic operation of the system?**

The solar panel charges the Lithium Iron Phosphate battery, and sends a signal to the control module to permit daytime watering. At daybreak and then every 4 hours, during daylight hours, two additional soil moisture level measurements are made. That level is compared with the user set 'desired' watering level. If the desired level is higher than the measured (current) moisture level, a watering cycle begins, turning on the valve for one, three, eight or twenty minutes, depending on the switch positions on the underside of the assembly. This amount of water prevents over-watering or water dripping through before it can be absorbed. It is possible to increase or decrease this amount of water if needed using the switches. The user adjusts the desired moisture level by turning the knob at the top of the control assembly to raise or lower the desired moisture setting. This is just the same as turning up or down the volume on a stereo. Every twenty seconds, the LED (Light Emitting Diode) will blink and indicates the 'Current' or measured moisture level. At any time a watering cycle is initiated when the knob is turned wetter than the current reading. Watering is stopped manually by turning the knob "down." All the way down stops all watering. At night (1 blink) or if the battery is low (2 blinks) the LED flashes briefly once per minute and the controller goes into a special low power mode.



### **SR-2™ by WaterGreat™ LLC Limited Two Year Warranty**

WaterGreat LLC warrants to its customers that its WaterGreat SR series products will be free from defects in materials and workmanship for a period of two years from the date of purchase. We will replace, free of charge, the defective part or parts found to be defective under normal use and service for a period of up to two years after purchase (proof of purchase required). We reserve the right to inspect the defective part prior to replacement. WaterGreat LLC will not be responsible for consequential or incidental cost or damage caused by the product failure. WaterGreat LLC liability under this warranty is limited solely to the replacement or repair of defective parts. To exercise your warranty, return the unit to WaterGreat LLC with a copy of the sales receipt. Contact us first. We can often solve your issue without returning the product. **YOU ARE IMPORTANT TO US. We will work with you to provide reduced pricing for any units under five years.**

# Watering considerations for Gravity Feed Systems

*Introduction: Nearly every gravity feed system has only a small amount of elevation, making piping sizing and water flow a challenge. This section provides some background information to provide good watering for gravity feed and rain barrel systems.*

## Quick Tips:

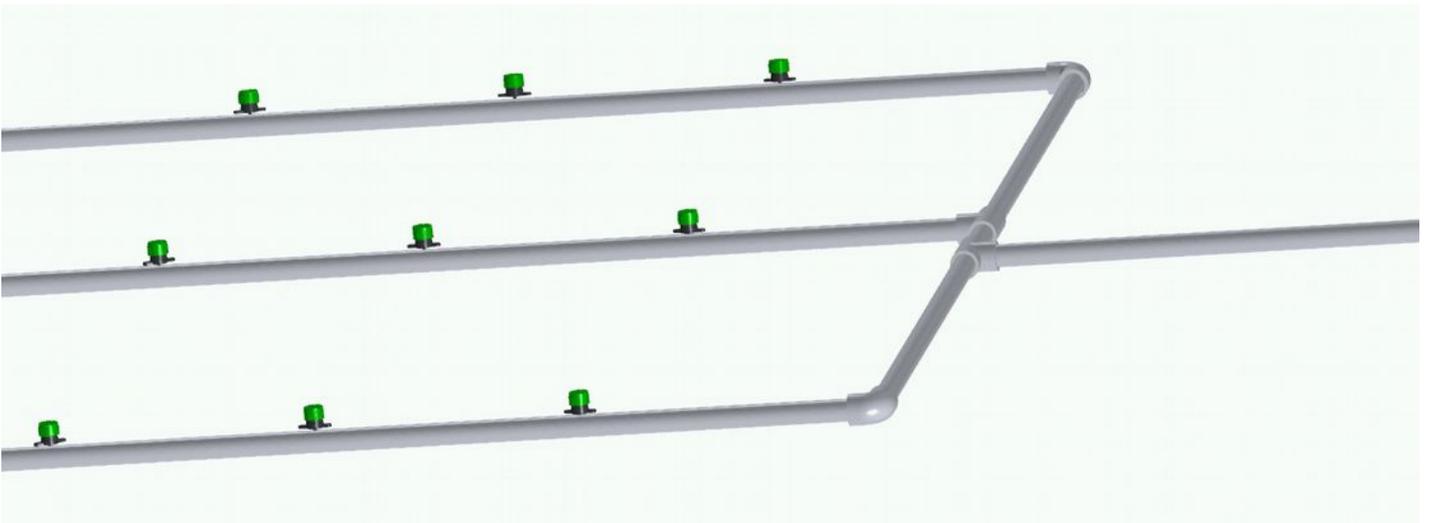
- 1) Your barrel or reservoir must be at least **ONE FOOT** above the ground – preferably more. This height will overcome the losses through the valve, filter and piping.
- 2) If watering multiple plants use a 0.710 tubing (0.62 inch inner diameter) or larger. The smaller tubing restricts too much.
- 3) Use drippers what allow for individual adjustment. Adjust drippers (or miniature sprayers to produce a small trickle out of each outlet. In out gravity feed watering complete systems, we use an **Adjustable Full Circle Stream Spray Bubbler 1/4" Barbed Inlet** **This adjustable bubbler works well when turned down as an adjustable dripper for gravity feed systems.**
- 4) Try to keep the total flow for the 0.710 tubing to about ½ gallon per minute or less to provide consistent results. The drippers (bubblers) at the end of the lines will have to be opened slightly more to allow for piping loss.
- 5) Instead of one long feed line, run a line to a central location and then Tee as needed from there. This keeps the total feed line distance to a minimum, and the flow through each pipe at a minimum.
- 6) Use of a 50 foot quality 5/8" garden hose, or a ¾ inch PVC pipe can extend the line from the water reservoir to the garden area without harm. A 1 inch PVC pipe can extend 100 to 150 feet without harm, as long as the total flow is ½ gallon per minute or less.
- 7) See <http://www.freecalc.com/fricfram.htm> to calculate losses for other type piping and valves. Generally for your flow you must have 0.3 feet of head loss - for the whole system - or your water will not flow completely through the pipe. This assumes you have raised your water source at least 1 foot above the ground.

*By purchasing this 100 foot 25 dripper watering system for gravity feed system all of the recommendations above are incorporated to get you up and watering right away. It hooks directly to the SR-2, or you may use PVC or a 5/8" garden hose to extend the water to your garden area.*



# Installing the Gravity Feed System

1. Locate your cistern or rain barrel at least ONE FOOT above the ground level – the higher the better.
2. The outlet can be a conventional spigot, but performance is improved if a ball valve of  $\frac{3}{4}$  inch is used. The outlet should be a  $\frac{3}{4}$  inch Male Hose Thread.
3. Use of screening highly recommended in rain barrel at water outlet. Install the stainless mesh filter assembly always before the valve. Without screening the pipe and drippers may plug from debris.
4. PVC may be used to extend the piping from the rain barrel or cistern. Use  $\frac{3}{4}$  inch schedule 40 or larger. Terminate the PVC with a male garden hose thread fitting. A high quality 5/8 inch hose may also be used.
5. Use the supplied elbow fittings to install the tubing as your design dictates. Do not kink the hose! Lay the tubing roll in the sun for a day with each end weighed down to allow it to straighten out. Often the feed line is buried if not in the garden area. At the garden use another elbow to bring the tubing above ground, and another elbow to direct it to your watering area. Hint: You may make small cuts on the end of the tubing to make insertion easier into the fittings. You may also use hot water to soften the end prior to insertion to make it easier. Caution: Do not burn yourself with the hot water.
6. Locate the feed tubing as centrally located as possible, with feed lines to your plant going from there. Always try to avoid one long run with all of the bubblers / drippers. This arrangement lowers the pressure drop for each leg to provide the most consistent watering flow.
7. Locate the SR2 controller in the garden area, so that the sensor may be placed near the drippers. After the controller is reading the moisture, you may adjust the knob to a higher setting than the number of blinks. The valve will then open over 5 seconds and allow for inspection of your installation. As necessary adjust each dripper / bubbler to provide even watering from all drippers. Your watering area needs to be level for best results. Turning the knob down stops watering.



Typical Installation using SR-2 Kit (Color for illustration, actual color is black)

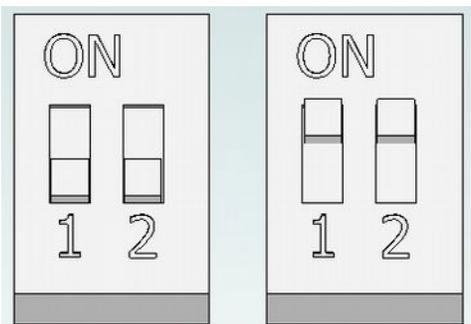
# WaterGreat SR-1™ Advanced Instructions

This document covers Setting the Watering Time, Connecting Wiring, and some basic troubleshooting guides. Contact [support@WaterGreat.com](mailto:support@WaterGreat.com) if you have inquiries or suggestions for clarifying these procedures.

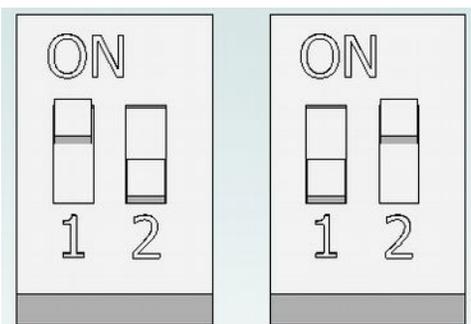
## Setting the Watering Time



8 MINUTE WATERING  
1 MINUTE      3MINUTE  
WATERING



8 MINUTE      20 MINUTE  
WATERING



1) Twist the control head counter clockwise until it hits the stop (a small amount), then separate the control head from the black support housing. The unit will separate showing the switches and terminal strip on the left.

2) Using a fingernail, a pen tip or a small screwdriver select the switches on the red switch panel to the watering time you wish – 8 minutes, 20 minutes or one minute. As shown in the pictures and captions: Switch 1 ON and Switch 2 ON is 3 minutes; Switch 1 ON and Switch 2 OFF is 8 minutes; Switch 2 ON and Switch 1 OFF provides 20 minutes of watering; both switches OFF provides one minute of watering. Note: this is only the watering time that occurs when the SET point (by the knob) is greater than the READING. The reading is shown by the blinking LED that repeats the last measured soil moisture every 20 seconds.

Normally 3 minutes works well. 20 minutes is used when a deep watering is desired, or with the 48 plant extender kit with the ½ gallon per hour drippers or similar. The one minute setting usually used when the three minutes it too much water, such as watering small potted plants.

## Removing or Lengthening the Wiring to the Valve

Summary: Consumers will occasionally wish to re-route their valve wiring, or extend it if the 9 ½ feet length is not adequate. Simple take care in removing the wiring, and pay particular attention to keeping the wiring as shown: Red wire (or attached wire tied to the red wire) on the LEFT and the White wire on the right.

If by accident you reverse this wiring you will not harm the system, but the 'ON' and the 'OFF' function of the valve will be reversed. If turning the moisture knob all of the way down turns the valve 'ON' you have reversed the wires.

Notice: This terminal strip uses a small opening and screwdriver. Take care in making sure you re-install the wiring in the proper hole, and when you tighten the wire back make sure that you have good insertion into the hole. Mistakenly shorting the two wires together, such as bare wires of the white touching the red during valve operation will short out the output transistors in the controller, and it will fail. Shorting the wiring is not covered by warranty, so be careful! Always turn the knob all of the way down before working on the wiring.

To extend the wiring, just pay attention to the color coding and carefully remove the existing cable from the drilled hole in the support housing. Purchase additional wiring (at least 22 gauge, preferably larger). Then use an outdoor rated splice to attach the existing cable to your new cable. If needed, you may enlarge the hole in the support housing to fit the new wire. It is not recommended to enlarge the hole much as it may crack the support housing. Most hardware stores sell 22/2 stranded CM plenum type cable that will fit into the existing support housing hole. Do not extend more than 20 feet.



Valve Wiring -Red wire on Left

SR-1™ by WaterGreat™ LLC Support

***We at WaterGreat LLC want you to be our customer for life. We will only sell you the same quality product that has proven itself to us as fellow gardeners. As part of this customer relationship, we promise to provide friendly prompt customer support by email, and we'll do our best to answer back within one business day or sooner. Please contact [support@watergreat.com](mailto:support@watergreat.com) for any questions. We also love to hear stories of success and enjoy pictures of happy gardens with this system.***

## Error codes and Conditions:

<b><u>LED indication</u></b>	<b><i>Condition</i></b>
One brief blink per minute	Low light condition – normal
Two brief blinks per minute	Low battery – move into sun more or contact support for battery replacement
Three brief blinks per minute	Hardware failure – contact Support
Continuous blinking	Normal first 15 minutes in the morning – then indicating a weak battery if persists. Move into a sunnier area. If problem persists after two days, contact support for a battery replacement.
Poor water flow	Check screen at input to the valve. If clogged, remove stainless housing screws and reverse flush and re-install.
Very low moisture readings (few or no blinks)	Check that sensor is close to the irrigation source, and that the soil appears moist. Reposition the sensor to firm soil near the water source or in the sprinkler pattern.